Nucsafe® Capabilities in Support of Japan’s Post Fukushima Programs
April 2015

Guardian® Radiation Monitoring Systems for the Measurement of Radiological and Nuclear Material
Company Information

Nucombe – Founded 1999
- Rapid Development Capability
- Proven Manufacturing Capacity
- ISO9001:2000, ISO14000, OHSAS 18001
- Current system platforms
  - **Stationary**
    - Vehicle, container, freight, rail, pedestrian, conveyor
  - **Mobile**
    - Land, marine, aerial
  - **Portable**
    - Backpack, vest, briefcase, handheld
  - **X-ray backscatter**
    - Non-destructive testing, security

Niki Glass – Founded 1923
- Nucombe distributor since 1999
- Applied Radiation Measurements
- Applied X-ray Measurements
- Cryogenics and Superconducting Magnets
- Cryobiology and Microscope Measurements
Security and Contamination Monitoring at Ports

- Designs are modular to allow pedestrian, vehicle, freight, train and container versions.
- ROI difference method and threat matrix allows NORM discrimination with PVT.
- NaI(Tl) provides ability to identify medical, industrial, SNM and NORM radionuclides.

Contamination Monitoring in Industrial Environments

- Asset protection
- Automated unmanned systems, notify personnel when alarms occur.
- Remote monitoring and diagnostics
- Modular components for reduced maintenance
Pedestrian Contamination System

- Patented method of detecting the location of a radioactive source.
- Permits free flowing traffic.
- Gamma and neutron detection with high sensitivity.
- Triggers camera images during alarms.
- Very low false alarm rate.
- Spectroscopy option.
- Local and remote alarms.
- Database storage of data.
Applications
- Very large area search
- Location and identification
- *Post incident surveys*

- Neutron and gamma ray pods
- Integrated GPS
- Real time and post mission analysis
- Bread Crumb path plotting display
- Contour /Heat mapping display
Rapid deployment
Large area coverage
- Dose surveys
- Radionuclide ID
Fast setup
- Easily moved
- Pedestrian, vehicle monitoring
Movable checkpoints
Integrated GPS
Real time and post mission analysis
Bread crumb plotting display
Contour Mapping display
Man Portable and Handhelds

- Backpack, vest-overlay and custom configurations
- Optional neutron detector (³He or ⁶Li)
- Large area gross gamma detection
- Gamma spectroscopy
- Voice, visual and vibration alarming
- High intensity color display, visible in direct sun light
- Easy push-button operation
- Data logging
- Wireless capable
- GPS / GIS
- Wireless ODI
- Rugged
- Light weight
- Long battery life (>15 hour life at -30C)

Two Handheld Form Factors
- Survey instrument with handle
- Holstered device
- NaI or LaBr₃ gamma detectors
Laboratory Systems

- Food Monitoring
- Waste Monitoring
- Radionuclide ID
- Quantitative Analysis
- Quality Assurance
Conveyor Waste System

- Ability to identify contamination in individual super sacks.
- Sorting by specific activity.
- System tests completed.
- Ready for deployment.
Can identify if all bags or specific bags have high activity.
X-Ray Backscatter Division

- Single-sided imaging
- Industrial proven technology
- Patented radiography by selective detection
  - Improved subsurface resolution
  - Improved subsurface contrast
  - Depth information
  - Flaw detection
  - Cracks and voids
  - Delaminating
  - Corrosion
  - Deposits
  - Adhesive thickness
- Ideal for imaging
  - Composite
  - Low Z materials
  - Water detection
- Foreign object detection
- Security applications

Space Shuttle External Fuel Tank Inspection

Corrosion Images

Robotic 225kV system imaging Orion heat shield
100kV transportable system
Ultra Electronics Nuclear Control Systems

Strengths

- 200+ staff dedicated to nuclear
  - high integrity analogue/digital electronics software design
  - radiation physics team
  - mechanical design team
  - obsolescence management team
  - nuclear qualified manufacturing
  - service and support team

- Deep understanding of nuclear safety and radiation detection

- Nuclear compliant quality systems

making a difference
Ultra Electronics Nuclear Control Systems

Expertise/Focus

Nuclear Sensors & Radiation Monitoring
- military radiation detection systems
- area radiation monitoring and secure networks
- emergency management systems

Nuclear Plant Protection Systems
- high integrity voting and trip systems
- diverse safety system design & qualification
- through life support including A&O management

Neutron Flux Detection & Nucleonics
- reactor protection instruments in-core monitoring systems
- nucleonics including
  - pulse counting, Campbell processing, log dc and linear dc
- MI and super-screened cables and connectors
- health physics
ULTRA ELECTRONICS Products

Continuous Air Monitor (CAM)
Measurement of alpha and/or beta particulate

CMS Gamma, an advance continuous gamma radiation monitoring station

Nuclear Emergency Warning System (N.E.W.S.). WEB based real time boundary radiation monitor platform

ANV S2 FV Radiation Monitoring System for Vehicles

ANV S2 FV Radiation Monitoring System for Ships

Area Gamma Monitor with GSM and GPS functionality